

EFFECTS OF PHENOTYPE- AND CONDITION-DEPENDENT FACTORS ON JUVENILE DISPERSAL  
OF THE RINGED SALAMANDER (*AMBYSTOMA ANNULATUM*)

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**ABSTRACT**

Dispersal is the movement of individuals from their natal population to a different breeding population. The frequency with which individuals disperse to new population or settle near natal sites has strong consequences for individual survival and fitness, as well as ecological and evolutionary processes. Despite the importance of dispersal, there have been limited empirical tests of the factors affect whether an individual disperses or is philopatric. My dissertation research measured the effects of phenotype- and condition-dependent factors on movement in the ringed salamander (*Ambystoma annulatum*). I first tested the effects of natal population density on juvenile phenotype and found support for non-additive density dependence, with the negative impact of each additional individual decreasing in magnitude as density increased. I then conducted a series of experiments to describe the effect of phenotype- and condition dependent factors. I reared salamanders from larvae under different natal densities, resulting in juveniles that different in the conditions they experienced (i.e., natal density), as well as their body size, condition, and morphology. I also measured the exploration behavior of individuals. I then tracked the movement of juvenile salamanders in two habitat conditions. In addition to both phenotype- and condition-dependent factors affecting juvenile dispersal, there was evidence that redundant cues over ontogeny affect dispersal. These studies indicate that aquatic natal habitat, its effects on juvenile phenotype, and juvenile terrestrial habitats should be considered when managing amphibian populations and metapopulations.